CLAIMS

1. An electrically conductive multilayer composite comprising:

first and second polymeric films, each of said films being flexible and having upper and lower surfaces, said second film being thermoformable at temperatures at and above its glass transition temperature;

a flexible electrically conductive layer applied to the upper surface of said first film; and

an adhesive interlayer adhering the lower surface of said first film to the upper surface of said second film, said adhesive interlayer having elastic properties sufficient to accommodate relative movement between the thus adhered films occasioned by flexure of said composite.

2. The composite of claim 1 wherein said second film is resilient.

3. The composite of claim 2 wherein said adhesive interlayer has elastic properties at temperatures between about -50 to 150°C.

4. The composite of claims 1 or 2 wherein said electrically conductive layer comprises a metallic foil adhered to the upper surface of said first film by means of a second adhesive.

5. The composite of claims 1 or 2 wherein said adhesive interlayer is pressure sensitive.

6. The composite of claim 2 wherein said second film has a higher bulk modulus of elasticity than that of said first film.

7. The composite of claims 1 or 2 further comprising a third flexible polymeric film adhered to the lower surface of said second film by a second adhesive interlayer.

8. The composite of claims 2 or 7 further comprising a second flexible electrically conductive layer applied to the side of said composite opposite to that to which said first mentioned electrically conductive layer is applied.

9. The composite of claims 1 or 2 wherein said electrically conductive layer is selected from the group consisting of copper, aluminum, nickel, tin, silver, gold, ferrous metals and alloys thereof.

10. The composite of claims 1 or 2 wherein said electrically conductive layer has a thickness of not more than about 20 mil.

11. The composite of claims 1 or 2 wherein the polymeric materials of said first and second films are selected from the group consisting of polyesters, polyamides, polyimides, polyurethanes, polyethylenenesulfones, polybutenes, and derivatives, polycarbonates, polystyrene, (and copolymers containing styrene) polyethylene (linear), polyethyethyleneketones, polyacrylates (including methacrylates), rigid PVC (and copolymers).

12. The composite of claims 1 or 2 wherein said electrically conductive layer is interfacially fixed with respect to the upper surface of said first film.

13. A method of preparing an electrically conductive multilayer composite comprising:

a) providing first and second polymeric films, each of said films being flexible and having upper and lower surfaces, said second film being thermoformable at temperatures at and above its glass transition temperature;

b) applying a flexible electrically conductive layer to the upper surface of said first film; and

(c) adhering the lower surface of said first film to the upper surface of said second film by means of an adhesive interlayer that has elastic properties sufficient to accommodate relative movement between the thus adhered films occasioned by flexure of said composite.

14. A method of preparing a shaped electrically conductive component, said method comprising:

a) preparing a multilayer composite by:

(i) providing first and second polymeric films, each of said films being flexible and having upper and lower surfaces, with at least said second film being thermoformable at temperatures at and above its glass transition temperature;

(ii) applying a flexible electrically conductive layer to the upper surface of said first film; and

(iii) adhering the lower surface of said first film to the upper surface of said second film by means of an adhesive interlayer that has elastic properties sufficient to accommodate relative movement between the thus adhered films occasioned by flexure of said composite.

b) heating said composite to an elevated temperature at least as high as the glass transition temperature of said second film;

c) shaping the thus heated composite into a selected shape; and

d) cooling the thus shaped composite to a temperature below said elevated temperature.

15. The method of claims 13 or 14 wherein the second film is resilient.